

28 MAY 1975

MEMORANDUM FOR: Director of Logistics

SUBJECT : Computer-Based Art Production

1. The present production of artwork is manual and is labor intensive. The GE Company is marketing a computer-based system designed to automate the production of artwork. This automation offers a significant reduction in the time required for artwork over existing and traditional methods. The GE system (Genigraphics) is the only known system on the market and has direct applicability to the Graphics & Visual Aids Staff (G&VAS) of the Printing & Photography Division (P&PD).

2. The Genigraphics system contains stock designs in computer storage. In addition to the stock designs--letters, numbers, symbols, logos, cartoons, scenes, etc.--a trained operator may input graphics of his preference. Then, by manipulating controls that consist of a keyboard and a pair of knobs (joy sticks) and dials, the operator can edit, crop, magnify, rearrange, distort, change color, and perform electronic wizardry on the image displayed on a television monitor. When the operator is satisfied, the push of a button transfers the image on the screen to a 35mm slide and/or stores the data on magnetic tape. The data may subsequently be quickly, efficiently, and conveniently updated through classical computer-based methods.

3. The computer generates images through the computerized juxtaposition of lines, slopes, rectangles, circles, and arcs. This base enables the system to be particularly efficient in the automation and composition of pie charts, bar charts, area charts, and other graphics composited from the basic geometric and alpha-numeric elements. An artist averages about one simple bar chart per hour. Genigraphics averages about 18 similar charts per hour. Once the format is established, data is entered on punched cards and the system produces finished slides. This ability to automate artwork, particularly statistical-type briefing material, would have the following advantages:

a. Free skilled artists from the tedious and mundane work of creating and correcting statistical-based briefing material.

OL 5 2547

SUBJECT: Computer-Based Art Production

b. Enable greater use of quality graphics throughout the Agency.

c. Provide an efficient method to meet peak workloads and short deadlines.

d. Extend an artist's capability to quickly create custom-designed artwork and special effects.

4. Tangible savings which would accrue to the Office of Logistics (OL) through the implementation of a computer-based system are as follows:

a. It is estimated that 50 percent of the predictable and reoccurring work processed by the six artists in G&VAS could be processed on a Genigraphics system. The time saving is dependent on a multitude of isolated and interdependent factors, but is estimated at 20 to 1. Assuming the accomplishment of the same workload as the shop now processes, average manpower savings per year could be 5,928 hours or 2.85 person years. Assuming an average grade of GS-11 at a cost of \$17K per year, the average cost avoidance would be around \$48,500 per year.

b. Peaks often occur where virtually all the artist's time is prioritized to the manual effort of updating existing organizational and statistical charts. The most recent example representing a peak of manual, routine, and machine applicable work was (is) G&VAS' support for the Presidential and Congressional committees. A computerized system would enable G&VAS to meet these peaks while concurrently maintaining productively on work which is not readily processed through automated methods. It is impossible to accurately quantify a cost avoidance for this category of work, but would probably be about one-half person year, or \$8,500 at the GS-11 level.

5. Other advantages which would accrue to the Agency are as follows:

a. G&VAS has a six-month backlog with some work in the backlog over nine months old and dying. In addition, 50 percent of the work is turned away. Negotiation, rank and interpersonal relations influence the queue of work accomplishment. A computerized system would enable G&VAS to be more

SUBJECT: Computer-Based Art Production

immediately responsive to virtually all Agency customers. The avoidance of the mutually unsatisfactory and often traumatic consequence of turning work away will eliminate a significant managerial time burden from the operation of the art shop.

b. P&PD knows of the existence of 10 art shops, including G&VAS, throughout the Agency--four in the DD/A, two in the DD/I, three in DD/S&T, and one in the IC Staff. In addition, G&VAS' limited staffing predetermines a substantial level of graphic activity in the operating components. A centralized computer-based system would offer a capability to provide Agency artwork quicker with fewer people. A computer-based system also offers the potential for savings through the consolidation of the various art shops.

c. The system enables fast response to priority requests. The DCI, for example, could give general direction and ideas to an artist and within a few hours preliminary briefing material would be available on slides, or alternatively remotely displayed in the DCI area on a video recorder. The Director could indicate approval or changes, the changes could be incorporated and revised data available in minutes. A remote communications option would enable the Director to access and review stored briefing material, and within minutes have available revised and uprated material.

6. A minimum system consisting of a control console, image processing equipment, display monitor and minicomputer cost \$300,000 in 1974. Our initial requirements would exceed the minimum system in the following areas:

- a. Higher digital storage capacity.
- b. Remote terminal and control systems.
- c. Output in addition to the 35mm slides (color negatives, etc.).

It is estimated that a system configuration to satisfy P&PD's immediate needs would cost from 360,000 to 400,000 in today's dollars. Assuming consolidation and centralization of most or all of the various art shops, the system could ultimately expand to include:

SUBJECT: Computer-Based Art Production

- a. Multiterminals.
- b. Multicomputer systems (one dedicated to console operations and one for slide production).
- c. Ability to store and generate more complex data
- d. Ability to interface with other computer-based systems.

7. The computer-based system would enable a quantum improvement in service. Turnaround time would be responsive and a higher percentage of customers could be served. The G&VAS' limited staff historically has been responsive to about 50 percent of the requests. A Genigraphics system will enable the same staff to meet a greater spectrum of requirements. An automated system offers the potential for substantial savings through the centralization of Agency art shops. If analysis is confined to saving manpower against a constant workload truncated at existing levels, the direct and tangible cost avoidance to P&PD is \$57,000 per year (paragraph 4.a. and 4.b. above). Based on this preliminary estimate, the cost amortization for a \$400,000 system dedicated to P&PD would be about seven years. As the life of the system is conservatively estimated in excess of seven years, system procurement is justified through P&PD cost benefits alone.

8. Preliminary analysis of P&PD and Agency requirements against the demonstrated power, versatility and flexibility of the Genigraphics system indicates procurement of a system is judicious and cost effective. As funds have not been identified in the OL budget for system procurement, it is recommended that \$400,000 be allocated in FY 1976 for the procurement of a system. System analysis will continue to determine the system configuration which is most responsive to Agency requirements.



Chief

Printing & Photography Division, OL

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